IFAC Proceedings Volumes (IFAC-PapersOnline) 2013, pages 581-586

Application of the Prony's method to analysis of the FTIR data

Nigmatullin R., Baleanu D., Ozcellik S., Cetin S.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

In this manuscript we demonstrate the possibilities of a new spectroscopy that has controllable errors and enables to decompose any smoothed strongly-correlated signal into a linear combination of the trigonometric functions. These possibilities are illustrated on analysis of the FTIR spectra related to Zn with addition of a small concentration of dopant Mn at different temperatures. The Prony's distribution of frequencies can contain information about possible fractal structure of the signal analyzed. The informative-significant band of frequencies that is obtained after the application of the Prony's decomposition can open new possibilities in analysis of different smoothed signals. © 2013 IFAC.

http://dx.doi.org/10.3182/20130204-3-FR-4032.00060